

WE CLAIM:

1. A method of preparing a surface for adhesion, the method comprising:

5 providing an initiator which is configured to shadow a portion of a surface of a substrate;

directing a laser toward the surface of the substrate to effect ablation of a non-shadowed portion of the substrate, forming structures on the surface of the substrate; and

10 applying an adhesive to the surface of the substrate.

2. The method of claim 1, wherein providing an initiator includes permitting ablation debris, which results from initial ablation of the surface of the substrate, to resettle on the surface of the substrate where the ablation debris has a higher ablation threshold than the surface of the substrate.

3. The method of claim 1, wherein providing an initiator includes providing a substrate incorporating particles with an ablation threshold higher than an ablation threshold of the surface of the substrate.

20 4. The method of claim 3, wherein providing an initiator also includes determining the desired size, shape and density of structures and selecting an appropriate number of particles to form the desired density of structures.

25 5. The method of claim 1, wherein providing an initiator includes spreading particles on the surface of the substrate where the particles have an ablation threshold higher than an ablation threshold of the surface of the substrate.

30 6. The method of claim 1, wherein providing an initiator includes providing a mask.

7. The method of claim 1, wherein the substrate is formed from a liquid crystal polymer or a polyimide.

8. The method of claim 1, wherein the substrate is formed from 5 a polyimide.

9. The method of claim 1, wherein the substrate is an element of a print cartridge assembly.

10 10. A method of preparing a surface for adhesion, the method comprising:

directing laser radiation towards the surface of the substrate to effect ablation of the substrate and create ablation debris, the ablation debris having a higher ablation threshold than the surface of the substrate;

15 permitting the ablation debris to resettle on the substrate surface and shadow a portion of the surface from laser radiation;

further directing laser radiation towards the surface of the substrate at an intensity sufficient to cause ablation of the substrate, but not sufficient to cause substantial ablation of the debris, thereby forming structures on the surface 20 of the substrate.

11. The method of claim 10, wherein providing, prior to directing laser radiation towards the substrate, an initiator configured to shadow a portion of the surface of the substrate.

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12. The method of claim 11, wherein providing an initiator includes providing a substrate incorporating particles with an ablation threshold higher than an ablation threshold of the surface of the substrate.

13. The method of claim 11, wherein providing an initiator also includes determining the desired size, shape and density of structures and selecting an appropriate number of particles to form the desired density of structures.

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14. The method of claim 11, wherein providing an initiator includes spreading particles on the surface of the substrate where the particles have an ablation threshold higher than an ablation threshold of the surface of the substrate.

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15. The method of claim 10, wherein the substrate is formed from a liquid crystal polymer

16. The method of claim 10, wherein the substrate is formed from a polyimide.

17. The method of claim 10, wherein the substrate is an element of a print cartridge assembly.

20 18. A method of increasing adhesion of an adhesive to a substrate, the method comprising:

directing a laser at a surface of a substrate to cause ablation of the surface and formation of ablation debris;

25 adjusting the fluence of the laser between an ablation threshold of the substrate and an ablation threshold of the ablation debris;

ablating the surface of the substrate;

progressively covering the surface of the substrate with ablation debris to effect formation of raised structures on the surface of the substrate; and applying an adhesive to the surface of the substrate.

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19. The method of claim 18, wherein progressively covering the substrate with ablation debris includes permitting the ablation debris to resettled on the surface of the substrate such that a first portion of the surface is covered with ablation debris and a second portion of the surface is uncovered with ablation debris, and ablating the uncovered portion of the surface to form structures in the covered portion of the surface.

20. The method of claim 18, wherein the substrate is formed from a liquid crystal polymer.

10 21. A method of eliminating interfacial failure between a first component and an adhesive in a print cartridge assembly, the method comprising:

15 directing a laser at a surface of a first component;

shadowing a portion of the surface of the first component to form a

high threshold ablation region and a low threshold ablation region;

20 adjusting the laser to ablate the low threshold ablation region at a rate faster than ablation of the high threshold ablation region in order to form structures on the surface of the first component; and

applying an adhesive to the surface of the first component.

22. The method of claim 21, wherein the high threshold ablation region includes ablation debris created as a result of ablation of the surface of the first component.

25 23. The method of claim 21, wherein the high threshold ablation region includes particles spread on the surface of the first component.

24. The method of claim 21, wherein the high threshold ablation region includes particles embedded in the first component.

30 25. The method of claim 21, wherein the first component is a print cartridge body.

26. The method of claim 21, wherein the first component is a flex circuit.

27. An interface between a first component and an adhesive, the 5 interface comprising:

a first component having a surface prepared by providing initiators on the surface that are configured to partially shield a portion of the surface and by directing a laser toward the surface to affect ablation of a non-shielded portion of the surface and further allowing ablated material to resettle to form structures 10 on the surface; and

an adhesive applied to the prepared surface.

28. The method of claim 27, wherein the structures formed on the surface of the first component are approximately between two and five 15 microns in height.

29. The method of claim 27, wherein the first component is a part of a print cartridge assembly.

20 30. A printer comprising:

a print cartridge assembly configured to supply ink to the printer, the assembly having a surface prepared by introducing initiators on the surface which shield a portion of the surface, and by directing a laser toward the surface to affect ablation of a non-shielded portion of the surface and further allowing 25 ablated material to resettle to form structures on the surface, and

an adhesive bonded to the prepared surface of the print cartridge assembly.

30 31. The printer of claim 30, wherein the surface of the print cartridge assembly is a surface of a print cartridge body.

32. The printer of claim 30, wherein the surface of the print cartridge assembly is a surface of a flex circuit.